a control mode change request, wherein the control mode change request includes at least one of the UAV ID or UAC ID.

[0009] The techniques described herein may be implemented in and/or used with a number of different types of devices, including but not limited to unmanned aerial vehicles (UAVs), unmanned aerial controllers (UACs), a UTM server, base stations, access points, cellular phones, tablet computers, wearable computing devices, portable media players, and any of various other computing devices.

[0010] This Summary is intended to provide a brief overview of some of the subject matter described in this document. Accordingly, it will be appreciated that the above-described features are merely examples and should not be construed to narrow the scope or spirit of the subject matter described herein in any way. Other features, aspects, and advantages of the subject matter described herein will become apparent from the following Detailed Description, Figures, and Claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] A better understanding of the present subject matter can be obtained when the following detailed description of various embodiments is considered in conjunction with the following drawings, in which:

[0012] FIG. **1**A illustrates an example wireless communication system according to some embodiments.

[0013] FIG. **1**B illustrates an example of a base station (BS) and an access point in communication with a user equipment (UE) device according to some embodiments.

[0014] FIG. **2** illustrates an example simplified block diagram of a WLAN Access Point (AP), according to some embodiments.

[0015] FIG. **3** illustrates an example block diagram of a UE according to some embodiments.

[0016] FIG. **4** illustrates an example block diagram of a BS according to some embodiments.

[0017] FIG. **5** illustrates an example block diagram of cellular communication circuitry, according to some embodiments.

[0018] FIG. **6**A illustrates an example of connections between an EPC network, an LTE base station (eNB), and a 5G NR base station (gNB).

[0019] FIG. **6**B illustrates an example of a protocol stack for an eNB and a gNB.

[0020] FIG. **7**A illustrates an example of a 5G network architecture that incorporates both 3GPP (e.g., cellular) and non-3GPP (e.g., non-cellular) access to the 5G CN, according to some embodiments.

[0021] FIG. **7**B illustrates an example of a 5G network architecture that incorporates both dual 3GPP (e.g., LTE and 5G NR) access and non-3GPP access to the 5G CN, according to some embodiments.

[0022] FIG. **8** illustrates an example of a baseband processor architecture for a UE, according to some embodiments.

[0023] FIG. **9** illustrates an unmanned aerial system operating in a cellular network, such as a 3GPP network, according to some embodiments.

[0024] FIG. **10** illustrates a base station in communication with a UAV, according to some embodiments.

[0025] FIG. **11** illustrates an example block diagram of a UAV, according to some embodiments.

[0026] FIG. **12** illustrates an example block diagram of a UAC, according to some embodiments.

[0027] FIG. **13** illustrates an example of a mode change based on UAV location, according to some embodiments.

[0028] FIG. **14** illustrates a block diagram of an example of a signaling for a mode change based on UAV location, according to some embodiments.

[0029] FIG. **15** illustrates an example of a mode change based on UAV/UAC C2 communication conditions, according to some embodiments.

[0030] FIG. **16** illustrates a block diagram of an example of a signaling for a mode change based on UAC radio conditions, according to some embodiments.

[0031] FIG. **17** illustrates a block diagram of another example of a signaling for a mode change based on UAV location, according to some embodiments.

[0032] FIG. **18** illustrates a block diagram of an example of a signaling for a mode change initiated by a UAC/UAV, according to some embodiments.

[0033] FIGS. **19-22** illustrate block diagrams of examples of methods for transferring control of an unmanned aerial vehicle (UAV) to an unmanned aerial system (UAS) traffic management system (UTM), according to some embodiments.

[0034] While the features described herein may be susceptible to various modifications and alternative forms, specific embodiments thereof are shown by way of example in the drawings and are herein described in detail. It should be understood, however, that the drawings and detailed description thereto are not intended to be limiting to the particular form disclosed, but on the contrary, the intention is to cover all modifications, equivalents and alternatives falling within the spirit and scope of the subject matter as defined by the appended claims.

DETAILED DESCRIPTION

Acronyms

[0035] Various acronyms are used throughout the present disclosure. Definitions of the most prominently used acronyms that may appear throughout the present disclosure are provided below:

[0036] UAV: Unmanned Aerial Vehicle

[0037] UAC: Unmanned Aerial Controller

[0038] UAS: Unmanned Aerial System

[0039] UTM: UAS Traffic Management

[0040] C2: Command and Control

[0041] BLOS: Beyond Line of Sight

[0042] 3GPP: Third Generation Partnership Project

[0043] TPAE: Third Party Authorized Entity

[0044] UE: User Equipment

[0045] RF: Radio Frequency

[0046] BS: Base Station

[0047] DL: Downlink

[0048] UL: Uplink

[0049] LTE: Long Term Evolution

[0050] NR: New Radio

[0051] 5GS: 5G System

[0052] 5GMM: 5GS Mobility Management

[0053] 5GCN: 5G Core Network

[0054] IE: Information Element